

AMENDMENTS TO THE CLAIMS:

1 (Original): A method of manufacturing granular magnetic recording media, comprising sequential steps of:

(a) providing a non-magnetic substrate including a surface;

(b) forming a layer stack on said surface of said substrate, said layer stack including an outermost granular magnetic recording layer with an exposed nano-scale rough and porous surface;

(c) treating said exposed nano-rough and porous surface of said granular magnetic recording layer to provide at least one of:

(i) a reduction of said nano-scale roughness and porosity;

(ii) increased compositional homogeneity;

(iii) increased microstructural homogeneity;

(iv) preferential removal of at least one element; and

(v) increased grain boundary coverage by a subsequently deposited protective overcoat layer; and

(d) forming a protective overcoat layer on the treated surface of said granular magnetic recording layer.

2 (Original): The method according to claim 1, wherein:

step (b) comprises forming a layer stack including an outermost granular perpendicular magnetic recording layer.

3 (Original): The method according to claim 1, wherein:

step (b) comprises forming a layer stack including an outermost granular longitudinal magnetic recording layer.

4 (Original): The method according to claim 1, wherein:

step (c) comprises etching said surface of said granular magnetic recording layer.

5 (Original): The method according to claim 4, wherein:

step (c) comprises sputter etching said surface.

6 (Original): The method according to claim 5, wherein:

step (c) comprises sputter etching said surface with ions of an inert gas.

7 (Original): The method according to claim 6, wherein:

step (c) comprises sputter etching said surface with Ar ions.

8 (Original): The method according to claim 1, wherein:

step (d) comprises forming a carbon (C)-containing protective overcoat layer.

9 (Original): The method according to claim 8, wherein:

step (d) comprises forming a diamond-like carbon (DLC) protective overcoat layer.

10 (Original): The method according to claim 9, wherein:

step (d) comprises forming said DLC protective overcoat layer by ion beam deposition (IBD).

11 (Original): The method according to claim 1, wherein:

step (a) comprises providing a non-magnetic substrate comprised of a non-magnetic material selected from the group consisting of: Al, NiP-plated Al, Al-Mg alloys, other Al-based alloys, other non-magnetic metals, other non-magnetic alloys, glass, ceramics, polymers, glass-ceramics, and composites and/or laminates of the aforementioned materials.

12 (Original): The method according to claim 1, wherein:

step (b) comprises forming a layer stack including a granular Co-based alloy magnetic recording layer comprised of a CoPtX alloy, where X = at least one element or material selected from the group consisting of: Cr, Ta, B, Mo, V, Nb, W, Zr, Re, Ru, Cu, Ag, Hf, Ir, Y, O, Si, Ti,

N, P, Ni, SiO₂, SiO, Si₃N₄, Al₂O₃, AlN, TiO, TiO₂, TiO_x, TiN, TiC, Ta₂O₅, NiO, and CoO, and wherein Co-containing magnetic grains are segregated by grain boundaries comprising at least one of oxides, nitrides, and carbides.

13 (Original): The method according to claim 1, further comprising a step of:

(e) forming a lubricant topcoat layer on said protective overcoat layer.

14 (Original): The method according to claim 13, wherein:

step (e) comprises forming a layer of a perfluoropolyether material.

15-25 (Canceled)

26 (New): A method of manufacturing granular magnetic recording media, comprising sequential steps of:

(a) providing a non-magnetic substrate including a surface;

(b) forming a layer stack on said surface of said substrate, said layer stack including a granular magnetic recording layer with an exposed nano-scale rough and porous surface; and

(c) sputter etching said nano-rough and porous surface of said granular magnetic recording layer.

27 (New): The method according to claim 26, wherein:

step (c) comprises sputter etching said surface with ions of an inert gas.

28 (New): The method according to claim 26, wherein:

said granular magnetic recording layer is a perpendicular magnetic recording layer.

29 (New): The method according to claim 26, wherein:

said granular magnetic recording layer is a longitudinal magnetic recording layer.

30 (New): The method according to claim 26, wherein:

said granular magnetic recording layer comprises a CoPtX alloy, where X is at least one element or material selected from the group consisting of: Cr, Ta, B, Mo, V, Nb, W, Zr, Re, Ru,

Cu, Ag, Hf, Ir, Y, O, Si, Ti, N, P, Ni, SiO₂, SiO, Si₃N₄, Al₂O₃, AlN, TiO, TiO₂, TiO_x, TiN, TiC, Ta₂O₅, NiO, and CoO.

31 (New): The method according to claim 30, wherein:

Co-containing magnetic grains are segregated by grain boundaries comprising at least one of oxides, nitrides, and carbides.

32 (New): A method of manufacturing granular magnetic recording media, comprising sequential steps of:

- (a) providing a non-magnetic substrate including a surface;
- (b) forming a layer stack on said surface of said substrate, said layer stack including a granular magnetic recording layer with an exposed nano-scale rough and porous surface;
- (c) sputter etching said surface of said granular magnetic recording layer with ions of an inert gas; and
- (d) forming a protective overcoat layer on the treated surface of said granular magnetic recording layer.

33 (New): The method according to claim 32, wherein:

step (d) comprises forming a diamond-like carbon (DLC) protective overcoat layer.

34 (New): The method according to claim 32, wherein:

step (d) comprises forming said DLC protective overcoat layer by ion beam deposition (IBD).

35 (New): The method according to claim 32, wherein:

said granular magnetic recording layer is a perpendicular magnetic recording layer.

36 (New): The method according to claim 32, wherein:

said granular magnetic recording layer is a longitudinal magnetic recording layer.

10/776,223

Response to Restriction:

Noting the Office Action of January 8, 2007 wherein restriction has been required, Applicants hereby elect Group I (claims 1-14) for prosecution in the above-identified application. Applicants submit that new claims 26-36 are drawn to elected Group I, the method of making a magnetic recording medium.